LETTERS TO THE EDITOR

Hypoglycaemic Agents from Indian Indigenous Plants

SIR,—A hypoglycaemic agent from *Allium cepa* Linn. (the domestic onion) has already been reported by Brahmachari and Augusti (1961). The present communication describes two more orally effective hypoglycaemic principles from Indian indigenous plants.

The therapeutic use of the seeds of *Eugenia jambolana* Lam. and the bark of *Ficus bengalensis* Linn. in the treatment of diabetes mellitus, has been reported by Kirtikar and Basu (1933). Kramer (1918) reported an extract of the seeds of *E. jambolana* to alleviate glycosuria, and a hypoglycaemic action of extracts of these seeds has been claimed by Kaufmann (1928), Mercier and Bonnafous (1940) Mukerji (1953), Vaish and Kehar (1954), and Sepala and Bose (1956).

An attempt has therefore been made to isolate orally-effective hypoglycaemic principles from the sun dried seeds of *E. jambolana* and the bark of *F. bengalensis*. These were powdered and thoroughly extracted separately with different solvents in soxhlets. Ethanolic (95 per cent) extracts were found to be hypoglycaemic on oral administration to groups of normal male albino rabbits weighing 2 kg. with fasting 18 hr. blood sugar levels of 100–125 mg./100 ml. Aqueous extracts also showed slight hypoglycaemic activity under similar conditions.

The viscous residues left after the evaporation of ethanol from these extracts were vacuum dried and separately assayed against tolbutamide (0·5 g./rabbit) as standard, and a dose-effect curve for each of these products was obtained for different doses following a similar procedure to that of Marks (1936). Blood-sugar was determined by the micro method of Folin and Malmros (1929).

The dose-effect relations of the two products within the dosage range of 0·5 g. to 3 g. per rabbit is shown in Fig. 1. These preliminary results establish the fact that both the seeds of *E. jambolana* and the bark of *F. bengalensis* contain some ethanol soluble orally effective hypoglycaemic principles.

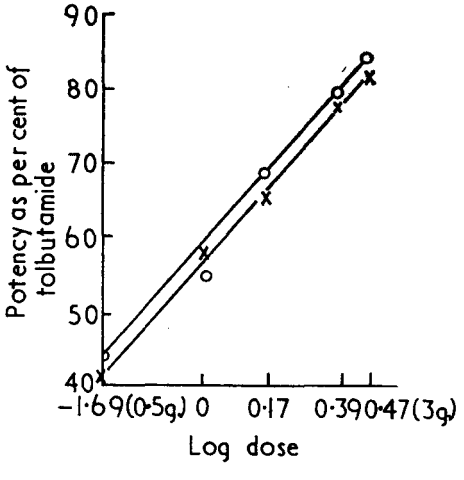

FIG. 1. The dose effect curves for a 95 per cent ethanolic extract from *Ficus bengulensis* (○—○), and *Eugenia jambolana* (X—X). Each curve is a mean of 6 rabbits.

The separation and purification of these hypoglycaemic principles is in progress.

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5-Hydroxytryptamine in Pineapples

SIR,—In view of the conflicting reports concerning the presence of 5-hydroxytryptamine (5-HT) in pineapples (Bruce, 1960; Foy and Parratt, 1960; West, 1960; Bruce, 1961), we have obtained the following results which we think will resolve the differences between Bruce, West and ourselves.

(*a*) Acetone extracts of the pulp of both unripe and ripe fruits contain a substance indistinguishable from 5-HT when assayed on the isolated rat uterus and rat colon preparations in the presence of atropine (10^{-7}). The contractions produced by both extract and standard 5-HT were antagonised by a specific anti-5-HT substance, bromolysergic acid diethylamide in a concentration of 2×10^{-8}–10^{-7}. There appeared to be more in unripe fruit (50 and 60 μg./g.) than in ripe fruit (19 μg./g.—an average of six estimations). A trace was also detected in stalk (0·2 μg./g.) but none in the leaves of the crown ($<$0·08 μg./g.) or base ($<$0·08 μg./g.).

(*b*) Juice squeezed from the pulp of ripe fruits contained 5-HT in a concentration of 13–22 μg./ml., an average of eleven estimations being 16 μg./ml.

(*c*) Canned pineapple juice contained much less than this, and certainly nothing like the amounts quoted by Dr. Bruce (Bruce, 1960; 1961). One brand of Australian juice contained 3·5, 4,6 and 8 μg./ml. and a Nigerian brand even less (1·3–4·2 μg./ml.—an average of 2·8 μg./ml. from six estimations).

There are three possible reasons for our previous failure to detect 5-HT in pineapple extracts (Foy and Parratt, 1960) and for the continuing discrepancy in the values for canned juice.

(i) There may be an enzyme in pineapple which destroys 5-HT, a situation already known to occur in the nettle plant (Collier and Chesher, 1956). But we have been unable to detect such an enzyme using a modification of the method used by Collier and Chesher.

(ii) Both fresh and canned pineapple juices are acid (pH 3·6–3·9). 5-HT is unstable in acid solution (Erspamer, 1940; Parratt, 1958), particularly when heated (Erspamer, 1940; Amin, Crawford and Gaddum, 1954). This would decrease the stability of 5-HT in acetone extracts of acid pulp and explain the lower values for canned juice compared with fresh juice.